AMENDMENTS TO THE CLAIMS;

The following Listing of Claims replaces all prior Listings and versions of claims in the above-identified application.

Listing of Claims

1. (Original) A method to increase the liquefaction of mucus or sputum in a patient that has excessively viscous or cohesive mucus or sputum, comprising contacting the mucus or sputum of the patient with a composition comprising a protein or peptide containing a thioredoxin active-site in reduced state effective to increase the liquefaction of the mucus or sputum as compared to prior to the step of contacting.

2. (Original) The method of Claim 1, wherein the patient has a lung disease in which abnormal or excessive viscosity or cohesiveness of mucus or sputum is a symptom or cause of the disease.

3. (Original) The method of Claim 1, wherein the patient has cystic fibrosis.

4. (Original) The method of Claim 1, wherein the step of contacting the mucus or sputum of the patient with the composition is performed by introducing the composition to the patient by a route selected from the group consisting of nasal, intratracheal, bronchial, direct installation into the lung and inhaled.

5. (Original) The method of Claim 1, wherein the mucus or sputum to be contacted is located in the respiratory tract, the gastrointestinal tract or the reproductive tract of the patient.

6. (Currently Amended) The method of Claim 1, wherein the composition ~~is administered to the patient in~~ further comprises a pharmaceutically acceptable carrier.

7. (Currently Amended) The method of Claim 1, wherein the mucus or sputum is contacted with the composition comprising the protein or peptide ~~is administered~~ by administering the protein or peptide to the patient in an amount that is between about 1.5 mmoles/kg weight of the patient and about 150 mmoles/kg weight of the patient.

8. (Original) The method of Claim 1, wherein the protein has a half-life in the patient of between about 5 minutes and about 24 hours.

9. (Currently Amended) The method of Claim 1, wherein a liquid phase of a total volume of a sample of mucus or sputum from the patient shows a statistically significant increase after ~~administration of~~ contact with the composition.

10. (Original) The method of Claim 1, wherein the thioredoxin active-site comprises the amino acid sequence C-X-X-C, wherein C residues are in reduced state, and wherein X residues are any amino acid residue.

11. (Original) The method of Claim 1, wherein the thioredoxin active-site comprises the amino acid sequence X-C-X-X-C-X, wherein C residues are in reduced state, and wherein X residues are any amino acid residue.

12. (Original) The method of Claim 1, wherein the thioredoxin active-site comprises the amino acid sequence X-C-G-P-C-X (SEQ ID NO:2), wherein C residues are in reduced state, and wherein X residues are any amino acid residue.

13. (Original) The method of Claim 1, wherein the thioredoxin active-site comprises the amino acid sequence W-C-G-P-C-K (SEQ ID NO:3), wherein C residues are in reduced state.

14. (Original) The method of Claim 1, wherein the protein comprises thioredoxin selected from the group consisting of prokaryotic thioredoxin, yeast thioredoxin, plant thioredoxin, and mammalian thioredoxin.

15. (Original) The method of Claim 1, wherein the protein comprises human thioredoxin.

16. (Original) The method of Claim 1, wherein the composition further comprises nicotinamide-adenine dinucleotide phosphate (reduced form) (NADPH) for reducing the thioredoxin active site of the protein.

17. (Original) The method of Claim 16, wherein the composition further comprises thioredoxin reductase.

18. (Original) A composition for use in the liquefaction of mucus or sputum, comprising a protein or peptide containing a thioredoxin active-site in reduced state and at least one additional agent for treatment of excessively viscous or cohesive mucus or sputum.

19. (Original) The composition of Claim 18, wherein the thioredoxin active-site comprises the amino acid sequence X-C-X-X-C-X, wherein C residues are in reduced state, and wherein the X residues are any amino acid residue.

20. (Original) The composition of Claim 18, wherein the thioredoxin active-site comprises the amino acid sequence X-C-G-P-C-X (SEQ ID NO:2), wherein C residues are in reduced state, and wherein the X residues are any amino acid residue.

21. (Original) The composition of Claim 18, wherein the thioredoxin active-site comprises the amino acid sequence W-C-G-P-C-K (SEQ ID NO:3), wherein C residues are in reduced state.

22. (Original) The composition of Claim 18, wherein the protein comprises thioredoxin selected from a group consisting of prokaryotic thioredoxin, yeast thioredoxin, plant thioredoxin, and mammalian thioredoxin.

23. (Original) The composition of Claim 18, wherein the protein comprises human thioredoxin.

24. (Original) The composition of Claim 18, wherein the composition further comprises nicotinamide-adenine dinucleotide phosphate (reduced form) (NADPH).

25. (Original) The composition of Claim 24, wherein the composition further comprises thioredoxin reductase.

26. (Original) A method to increase the liquefaction of mucus or sputum in a patient that has excessively viscous or cohesive mucus or sputum, comprising contacting the mucus or sputum in the respiratory tract of the patient with a composition comprising a protein comprising the amino acid sequence X-C-X-X-C-X, wherein C residues are in reduced state, wherein the contact of composition increases the volume of the liquid phase in a sample of mucus or sputum from the patient as compared to prior to contact with the composition.